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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/709,454	11/13/2000	Masaki Matsui	1-99	4344

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LAW OFFICE OF DAVID G POSZ
2000 L STREET, N.W.
SUITE 200
WASHINGTON, DC 20036

EXAMINER
SHAKERI, HADI

ART UNIT	PAPER NUMBER
3723	

DATE MAILED: 05/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/709,454	MATSUI, MASAKI	
	Examiner	Art Unit	
	Hadi Shakeri	3723	

-- The MAILING DATE of this c mmunication appears on the c ver sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 44-73 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 44-73 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 13 November 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 55, 72 and 73 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claim 55, the term "locating" renders the claim indefinite because it is unclear what is being claimed, i.e., "placing" or "finding".

4. Regarding claim 72, the claim language as written is indefinite because it is unclear whether the surface is being pressed during the scrubbing step or the polishing step.

5. Regarding claim 73, the limitation of "at a concentration of 10% by weight" renders the claim indefinite because while reciting an abrasive grains having a certain size by itself is definite, reciting a concentration of 10% in itself is indefinite because it is unclear what the concentration is relative to. Is a concentration of 10% abrasive in the cloth being claimed?

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 44-56, 58-62, 64, and 66-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. in view of Towery et al., US Patent No. 6,270,395.

Kikuchi et al. discloses all the limitations of claim 44, i.e., a method of Chemical Mechanical Polishing (CMP) using chromium oxide and an oxidizing agent, Cr_2O_3 and air, page 193, except for an oxidizing chemical liquid. It discloses that Cr_2O_3 possibly operates catalytically and enhances the surface oxidation during polishing. Towery et al. teaches the used of oxidizing agents with compatible oxidizing abrasive particles, in CMP semiconductor processing or other precision polishing processes, col. 3, lines 41-54. It is know in the art to use oxidizing agents, e.g., hydrogen peroxide, to enhance polishing process, as evident by Towery et al. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method of Kikuchi et al. with an oxidizing agent, e.g., hydrogen peroxide, as taught by Towery et al. to enhance the chemical mechanical process.

Regarding claims 46 and 47, PA as applied above meets the limitations, embodiments in which oxidizing slurries, Towery, col. 9, lines 35, are used.

Regarding claims 48-55, 58-62, 64, and 66, PA as applied above meets the limitations.

Regarding claims 56 and 67-69, PA discloses the claimed invention except for specified materials. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use titanium dioxide, cadmium sulfide, diindium trioxide or different type of polishing pad, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

8. Claims 57, 63, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art (Kikuchi et al. in view of Towery et al.) as applied to claims above, and further in view of Satake et al., US Patent No. 6,012,967.

Prior Art as applied above meets all the limitations of the above claims except for a heating means, e.g., a light source to irradiate the oxidizing agent. It is known in the art as evident by Satake et al. to use a light source for heating or irradiating in a chemical mechanical polishing. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method and apparatus of PA by using a light source for heating or irradiating as taught by Satake et al. for more uniform polishing removal rate.

9. Claims 70-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Art (Kikuchi et al. in view of Towery et al.) as applied to the claims above, and further in view of Applicants Admitted Prior Art (AAPA).

Prior Art as applied above meets all the limitations of the above claims except for a pre-polishing step utilizing superfine diamond grains. As admitted by the Applicant, pages 2 and 3, it is kwon in the art to use superfine abrasive grains followed by another process to remove scratches. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the modified invention of PA by preparing the workpiece (rough polishing), utilizing superfine diamond abrasive prior to fine polishing as it is commonly practice in the art depending on the workpiece and operation parameters, e.g., desired result, time...

Regarding the use of the specified size, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use diamond grain size finer than #8000, depending on the workpiece parameters, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Regarding the specific pressure and concentration, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the specific pressure

and concentration, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

10. Applicant's arguments, regarding claims 44-73 filed 4/8/02 have been fully considered but they are not persuasive. With respect to the argument that Towery does not disclose an oxidizing agent for metal oxide particles and that the metal oxide particles merely remove material, page 16 last paragraph, it is pointed out that while this is true for some non-oxidizing abrasives, it is in error regarding others. Towery teaches, col. 3, lines 41-46, "The oxidizing slurry is formed in a solution utilizing non-oxidizing abrasive particles with an oxidizing agent, oxidizing abrasive particles alone or selected oxidizing abrasive particles with compatible

oxidizing agents". Further it is noted that Towery is not being modified by Kikuchi, as argued on page 17, lines 1-3; rather Kikuchi is modified by utilizing oxidizing agents as taught by Towery.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Kikuchi already discloses "catalytic mechanochemical polishing", page 189, and "catalytic oxidation" in polishing silicon carbide with chromium, Towery teaches the use of hydrogen peroxide in CMP as an oxidizing agent.

11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Hadi Shakeri at (703) 308-6279, FAX (703) 746-3279 for unofficial documents. The examiner can normally be reached on Monday-Thursday, 7:30 AM to 6:00 PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist at (703) 308-1148.

5-10-02
EILEEN P. MORGAN
PRIMARY EXAMINER

HS

May 10, 2002